HITACHI

AM/FM STEREO TUNER
UKW/MW STEREO TUNER
TUNER STEREO AM/FM

MODEL
MODELL
MODÈLE **FT-920**

SERVICE MANUAL
SERVICE ANLEITUNG
SERVICE MANUAL

FT-920

1. SPECIFICATIONS, TECHNISCHE DATEN, CARACTERISTIQUES TECHNIQUES

Circuit	FM: Dual gate MOS FET, RF single stage, 4 interlocked variable condenser, 4-stage differential IF amplifier wide band linear detector, PLL MPX AM: RF single stage, 3 interlocked variable condenser
Semiconductors	IC: 4 Transistors: 25 (1 FET) Diodes: 25 (1 LED)
• FM SECTION	
Frequency range	88-108 MHz
Sensitivity	1.7 μV (IHF), 3 μV (S/N 50 dB Mono), 32 μV (S/N 50 dB Stereo)
Image rejection	more than 75 dB
IF rejection	more than 90 dB
Harmonic distortion	**Mono** 0.15% (1 kHz), **Stereo** 0.25% (1 kHz)
Signal-to-noise ratio	72 dB
Selectivity (IHF)	80 dB
Stereo separation	50 dB (1 kHz)
Capture ratio	1.0 dB
Antenna input impedance	300 ohms balanced type, 75 ohms unbalanced type
• AM SECTION	
Frequency range	530-1,605 kHz
Sensitivity (IHF)	18 μV
Image rejection	more than 65 dB
IF rejection	more than 85 dB
Selectivity	40 dB
Signal-to-noise ratio	50 dB
• Output voltage/Output impedance	0.65V/less than 6 kohms (Fixed), 0.04-1.2V/less than 1 kohms (Variable)
• Power supply	AC 120V 60 Hz, AC 220-240V 50 Hz
• Power consumption	19 W
• Dimensions	435 (W) X 144 (H) X 394 (D) mm
• Weight	7.8 kg
• Accessory circuits	FM tuning meter, Signal/FM multipath meter, FM stereo indicator, FM muting/auto lock switch, Stereo-mono automatic change-over, FM/AM output level adjustment, MPX noise filter switch, FM 4-channel MPX output terminal, FM multipath output terminal, AM bar antenna

Specifications and designs may be changed without notice for improvement.

Schaltung	UKW: Dual-Gate MOS FET, RF (einstufig), 4 verriegelte Verstellkondensatoren, 4-stufige Zwischenfrequenz Differentialverstärkung, Breitband-Linearglei-chrichtung, PLL MPX MW: RF (abgestimmt, einstufig), 3 verriegelte Verstellkondensatoren
Bestückung	4 ICs, 25 Transistoren (1 FET), 25 Dioden (1 LED)
• UKW-Empfangsteil	
Wellenbereich	88-108 MHz
Empfindlichkeit	1.7 μV (IHF), 3 μV (Mono-Geräuschspannungsabstand 50 dB), 32 μV (Stereo-Geräuschspannungsabstand 50 dB)
Spiegelselektion	mehr als 75 dB
ZF – Dämpfung	mehr als 90 dB
Klirrfaktor	**Mono** 0.15% (1 kHz) **Stereo** 0.25% (1 kHz)
Geräuschspannungsabstand	72 dB
Selektivität (IHF)	80 dB
Kanaltrennung	50 dB (1 kHz)
Einfangverhältnis	1.0 dB
Antennen-Eingangsimpedanz	300 Ohm (abgeglichen), 75 Ohm (nicht abgeglichen)
• MW-Empfangsteil	
Wellenbereich	530-1,605 kHz
Empfindlichkeit (IHF)	18 μV
Spiegelselektion	mehr als 65 dB
ZF – Dämpfung	mehr als 85 dB
Selektivität	40 dB
Geräuschspannungsabstand	50 dB
• Ausgangsspannung/Ausgangsimpedanz	0.65 V/weniger als 6 kOhm (fest), 0.04 – 1.2 V/weniger als 1 kOhm (einstellbar)
• Netzspannung	Wechselstrom 120 V/60 Hz oder 220–240 V/50 Hz
• Leistungsaufnahme	19 W
• Abmessungen	435 (B) x 144 (H) x 394 (T) mm
• Gewicht	7.8 kg
• Sonstiges	UKW-Abstimmanzeige, Signal/UKW-MULTIPATH-Meter, UKW-Stereo-Anzeige, UKW-Stillabstimmung, Stereo/Mono-Umschaltautomatik, UKW/MW-Ausgangsp-egelregelung, MPX-Geräuschfilter, MPX-Ausgangsklemmen für UKW-Quadrofonie (4 Kanal), UKW-MULTIPATH-Ausgangsklemmen, MW-Stabantenne

Änderungen der technischen Daten bleiben im Sinne der ständigen Verbesserung vorbehalten.

Circuit	FM: MOS FET à double porte, RF à simple étage, 4 condensateurs variables solidaires, amplification IF à quatre étages différentiels, détecteur linéaire de bande passante, PLL MPX AM: RF syntonisé à simple étage, 3 condensateurs variables solidaires
Semi conducteur	IC: 4 transistors: 25 (1 FET) Diodes: 25 (1 LED)
• Partie FM	
Bande de fréquence	88-108 MHz
Sensibilité	1.7μV (IHF), 3μV (S/B 50 dB Mono), 32μV (S/N 50 dB Stéréo)
Rejet image	plus de 75 dB
Rejet MF	plus de 90 dB
Distorsion hamonique	**Mono** 0.15% (1 kHz) **Stéréo** 0.25% (1 kHz)
Rapport signal/bruit	72 dB
Sélectivité (IHF)	80 dB
Séparation stéréo	50 dB (1 kHz)
Rapport de captage	1.0 dB
Impédance d'entrée de l'antenne	type compense de 300 ohms, type non compensé de 75 ohms
• Partie AM	
Bande de fréquence	530-1,605 kHz
Sensibilité (IHF)	18 μV
Rejet image	plus de 65 dB
Rejet MF	plus de 85 dB
Sélectivite	40 dB
Rapport signal/bruit	50 dB
Voltage de sortie/Impédance de sortie	0.65 V/moins de 6 kohms (Fixes), 0.04–1.2 V/moins de 1 k ohms (variables)
• Alimentation	CA 120 V 60 Hz, CA 220–240 V 50 Hz
• Consommation	19 W
• Dimensions	435 (L) x 144 (H) x 394 (P) mm
• Poids	7.8 kg
• Circuits Accessories	mètreur d'accord FM, mètreur Signal/ FM multipath, indicateur FM stéréo, commutateur atténuateur FM/verouillage automatique, commutateur automatique stéréo /mono, réglage du niveau de sortie FM/AM, interrupteur du filtre de bruit MPX, borne de sortie MPX des 4 canaux FM, borne de sortie FM Multipath, antenne ferrite AM

Les caractéristiques techniques et la présentation peuvent être modifiées sans préavis pour des raisons d'améliorations.

2. FEATURES, MERKMALE, CARACTERISTIQUES

1. The FM tuner intermediate frequency amplifier has excellent limiter characteristics because of the use of 4-stage differential amplification with ICs used throughout and a 3-element ceramic filter with excellent phase characteristics which also greatly improves selectivity. Quadrature detector using ICs extensively makes wider bandwidth and low distortion reception possible.
2. The newly developed PLL (Phase Locked Loop) IC which is the result of Hitachi's advanced technology is used in the FM detector thereby achieving high separation and low distortion combined with excellent reliability which is resistant to changes in temperature and the lapse of time.
3. An auto-lock tuning mechanism is employed which makes the location of the optimum tuning position easy in FM reception. After the selection of the station, the auto-lock tuning mechanism operates immediately after the tuning knob is released, automatically tuning to the optimum frequency to which it is then locked. This mechanism eliminates tuning errors and once tuned outside influences do not affect the tuning.
4. Stable reception possible with optimum separation and minimum distortion.
   The use of reed relays in the FM muting circuit eliminates inter-station noise which occurs in detuning, making listening to broadcasts more enjoyable.

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1. Die Verwendung von keramischen Filtern mit großer Flankensteilheit und vierstufiger Differentialverstärkung mit integrierten Bausteinen im Zwischenfrequenzverstärker des UKW-Tuners hat eine Erhöhung der Trennschärfe bewirkt und zu ausgezeichneter Grenzwert-Charakteristik geführt. Ein mit integrierten Schaltungen bestückter Phasenschieberkreis gewährleistet große Bandbreite und sehr geringen Klirrfaktor.
2. Die neu entwickelte, phasenstarre PLL-Schaltung (PLL = Phase Locked Loop) – eine weitere technologische Errungenschaft von HITACHI – im UKW-Demodulator führt zu erhöhter Trennschärfe bei verminderter Verzerrung; ein weiterer Vorteil ist die ausgezeichnete Beständigkeit gegen Temperaturschwankungen und Alterung.
3. Für optimalen UKW-Empfang ist dieser Tuner mit Scharfabstimm-Automatik ausgerüstet. Allein durch das Berühren des Abstimmreglers wird die Scharfabstimm-Automatik für die Dauer der Sendersuche außer Betrieb gesetzt. Nach erfolgter Sender-Einstellung und Loslassen des Abstimmreglers schaltet die Automatik wieder ein, bringt den Sender genau auf Mitte und hält ihn unverrückbar fest.
4. Stabiler Empfang mit optimaler Trennschärfe und geringstem Klirrfaktor.
   Die Verwendung von Zungenrelais in der UKW-Stillabstimmung eliminiert Zwischenstationsrauschen beim Abstimmen und trägt so zu erhöhtem Hörgenuß bei.

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1. Le récepteur MF à amplificateur de fréquence intermédiaire a d'excellentes caractéristiques grâce à l'utilisation d'une amplification différentielle à 4 étages avec circuits intégrés exclusivement et un filtre à céramique à trois éléments avec d'excellentes caractéristiques de phase qui améliore aussi grandement la sélectivité. La détection tétraphonique utilisant largement les circuits intégrés augmente la largeur de la bande passante et rend possible une réception à faible distorsion.
2. Le circuit intégré PLL (boucle à blocage de phase) récemment développé et qui est le résultat de la technologie avancée Hitachi, est utilisé dans le détecteur MF parvenant ainsi à une haute précision et à une faible distorsion en même temps qu'à une excellente fiabilité qui résiste aux changements de température ainsi qu'au vieillissement.
3. Un mécanisme auto blocage des stations est employé et il facilite la localisation de la position optimale des stations dans la réception MF. Après la sélection de la station le mécanisme auto blocage entre en jeu immédiatement après que le bouton de sélection est relaché choisissant automatiquement la fréquence optimale à laquelle il se bloque. Ce mécanisme élimine les erreurs de sélection et empêche les influences extérieures d'affecter le réglage une fois qu' elle est opérée.
4. Réception stable possible avec une précision optimale et une distorsion minimale.
   L'utilisation de relais dans le circuit de réglage silencieux élimine les bruits de rêglage entre les stations ainsi que ceux qui proviennent dans le changement des stations, rendant votre écoute des programmes plus agréable.

3. SERVICE POINT, WARTUNGSPUNKTE, POINTS DE SERVICE

1. Removing the control printed wiring board

Remove the escutechon, detach the meter lead wire from the control printed wiring board. Then detach the screw shown in Fig. 1.

2. Replacement of the dial scale illumination lamp

Detach the lamp printed wiring board. Since the lamp is attached to the printed wiring board as shown in Fig. 2, break the lamp after melting the solder of the lead wire. (Caution: Detaching forcibly by hand can cause injury). A lamp as shown in Fig. 3 is provided for replacement.

3. Caustion on replacing FM ceramic filter

Filters are classified by color-red, blue, orange-depending on the different characteristics. Match the colors of MF201-203 when replacing.

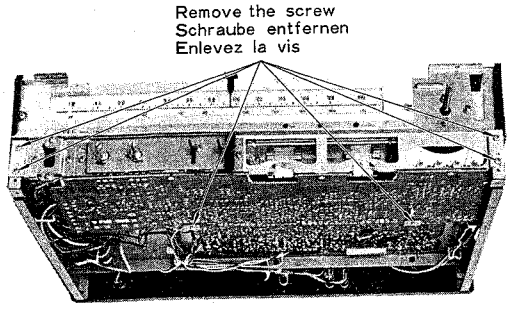
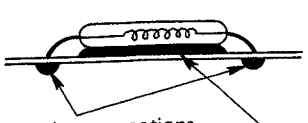
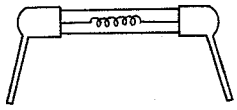


Fig. 1 Abb. 1



Unsolder the connections
Die Verbindung ablöten
Désoulez les connexions

Fig. 2 Abb. 2



Adhesive (melt with heat)
Kleber (mit Wärme lösen)
Adhésif (fondu avec la chaleur)

Fig. 3 Abb. 3

4. Use of ferrite core

A ferrite core is attached to the second gate of FET101 and the collector of Q101 (transistor) in the FM section, to prevent oscillation.
This ferrite is also attached to the replacement parts.

5. Since a sensor-touch auto-lock mechanism is employed, the tuning knob is insulated from the chassis earth by washers and spacers. Be sure to install them after repair.

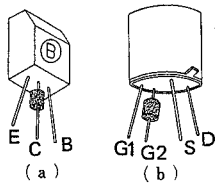


Fig. 4 Abb. 4

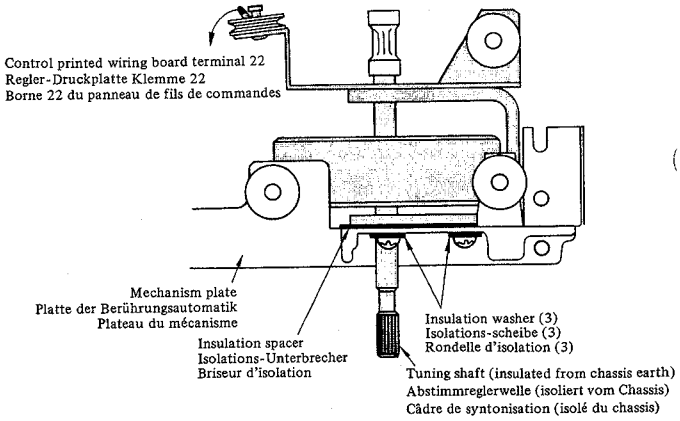


Fig. 5 Abb. 5

1. Ausbau der Regler- Druckplatte

Das Schild abnehmen und den Instrumenten-Leitungsdraht von der Regler-Druckplatte lösen. AnschlieBend die in Abbildung 1 gezeigte Schraube entfernen.

2. Auswechseln der Skalenbeleuchtungslampe

Die Lampen-Druckplatte ausbauen. Die Lampe ist an der Druckplatte gemäB Abbildung 2 befestigt. Den Leitungsdraht ablöten und danach die Lampe herausbrechen. (Vorsicht: Beim Ausbrechen der Lampe mittels Hand könnten Verletzungen auftreten.) Eine Ersatzlampe ist gemäB Abbildung 3 angebracht.

3. Auswechseln der FM-Keramikfilter

Die Keramikfilter sind in Übereinstimmung mit ihren Charakteristiken mit verschiedenem Farbkode (Rot, Blau, Orange) versehen. Beim Austausch daher immer das entsprechende Filter an den Farbkode von MF201-203 anpassen.

4. Verwendung des Ferritkerns

Ein Ferritkern ist am zweiten Tor des FET101 und des Kollektors von Q101 (Transistor) des FM-Teiles angebracht, um Schwingungen zu vermeiden. Ein zusätzlicher Ferritkern befindet sich im Ersatzteilsatz.

5. Da der Abstimmregler mit Berührungsautomatik ausgerüstet ist, ist der Abstimmknopf mittels Unterlegescheiben und Abstandhaltern gegen Masseschluß mit dem Chassis isoliert. Nach allfälligen Reparaturen sind die genannten Teile unbedingt wieder einzubauen.

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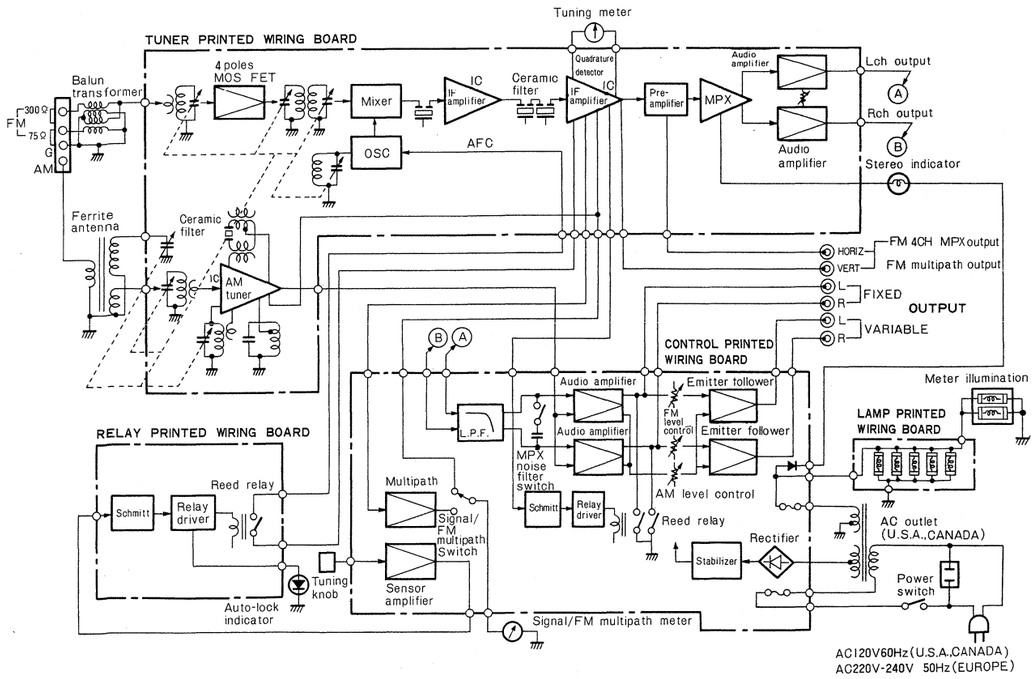
1. **Pour enlever le plateau imprimé de commande**
   Enlevez l'écusson, détachez le fil de métreur du plateau de commande. Puis détachez la vis montrée sur la figure 1.
2. **Remplacement de la lampe d'illumination du cadran d'échelle**
   Détachez le panneau des fils de lampe. Puis que la lampe est attachée à ce panneau comme le montre la Fig/2, brisez la lampe après avoir fait fondre la soudure du fil conducteur. (Attention: forcer avec la main pourrait provoquer des dégats). Une lampe est fournie pour le remplacement comme le montre la Fig. 3.
3. **Précautions pour remplacer le filtre céramique FM**
   Les filtres sont classés par couleur-rouge, bleu, orange-selon leurs caractéristiques. Ajustez les couleurs de MF201-203 quand vous les remplacez.
4. **Utilisation d'un noyau de ferrite**
   Un noyau de ferrite est incorporé à la deuxième porte de FET101 et au collecteur de Q101 (transistor) dans la partie MF pour éviter les oscillations.
   Cette ferrite est aussi incorporée auz pièces de remplacement.
5. Puisqu'on utilise un mécanisme de verrouillage automatique de la touche de sensibilité, la commande de syntonisation est isolé du chassis par des rondelles et des isolants. Assurez-vous de bien les installer après la réparation.

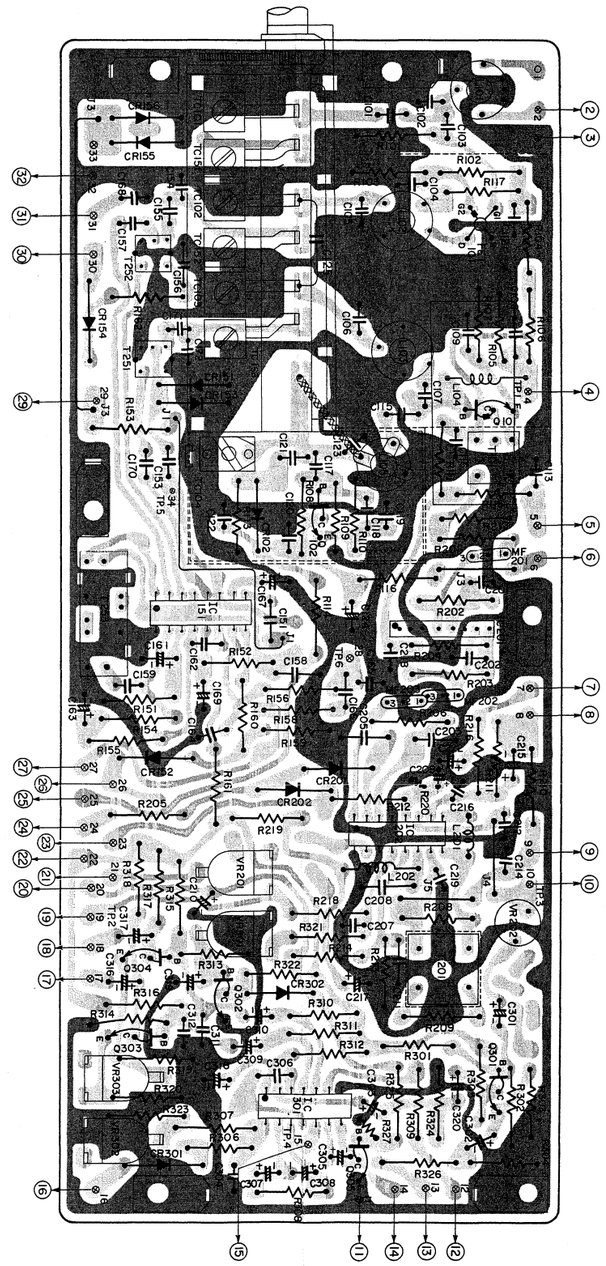
4. BLOCK DIAGRAM, BLOCKSCHEMA, SCHEMA



5. PRINTED WIRING BOARD, PRINTPLATTEN, PLAN DE BASE

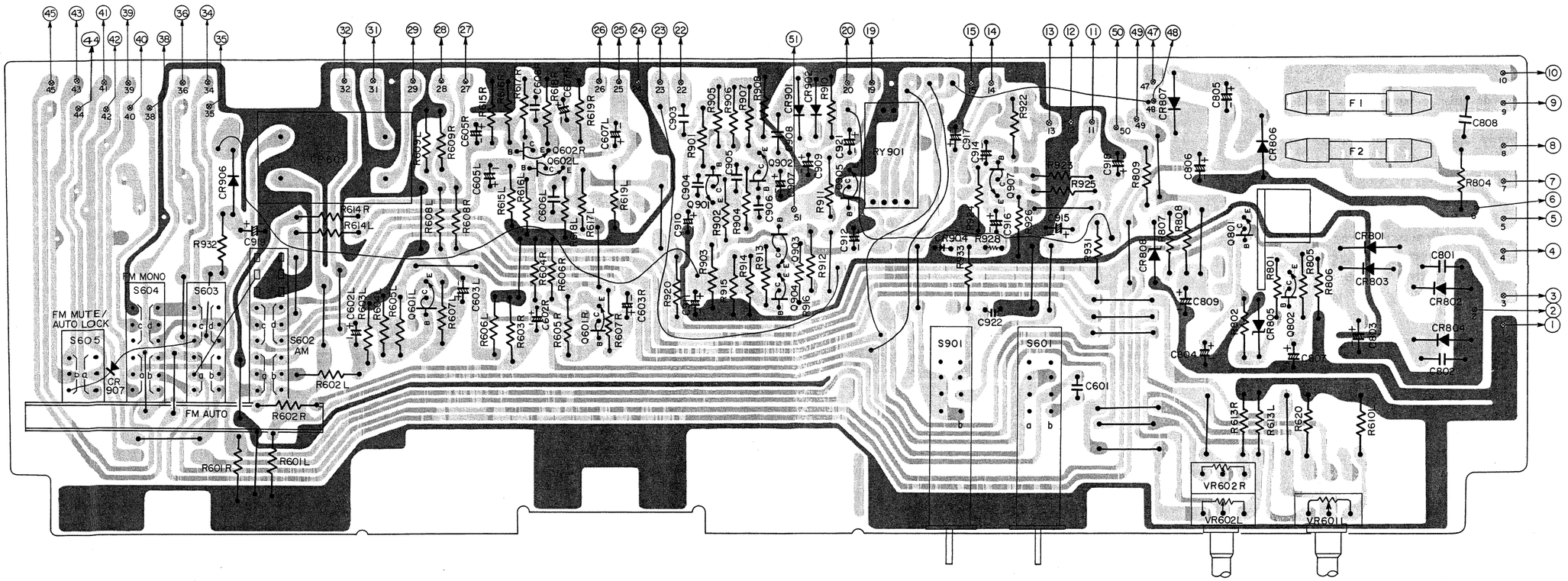
TUNER PRINTED WIRING BOARD

The terminal No. shows the stamp on the printed wiring board. This number matches the number in the circuit diagram.

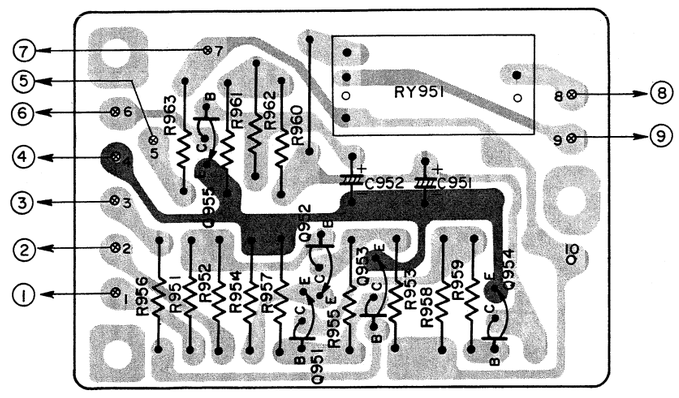


CONTROL PR INTED WIRING BOARD

The terminal No. shows the stamp on the printed wiring board.
This number matches the number in the circuit diagram.

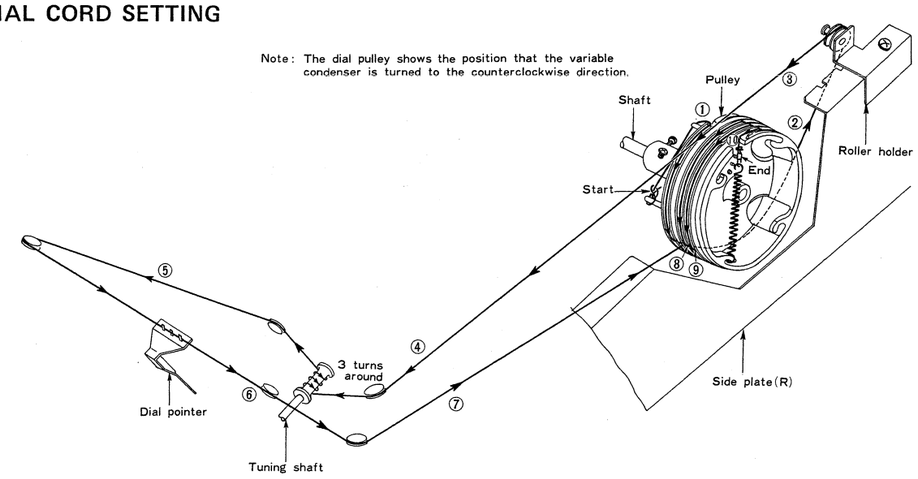


RELAY PRINTED WIRING BOARD



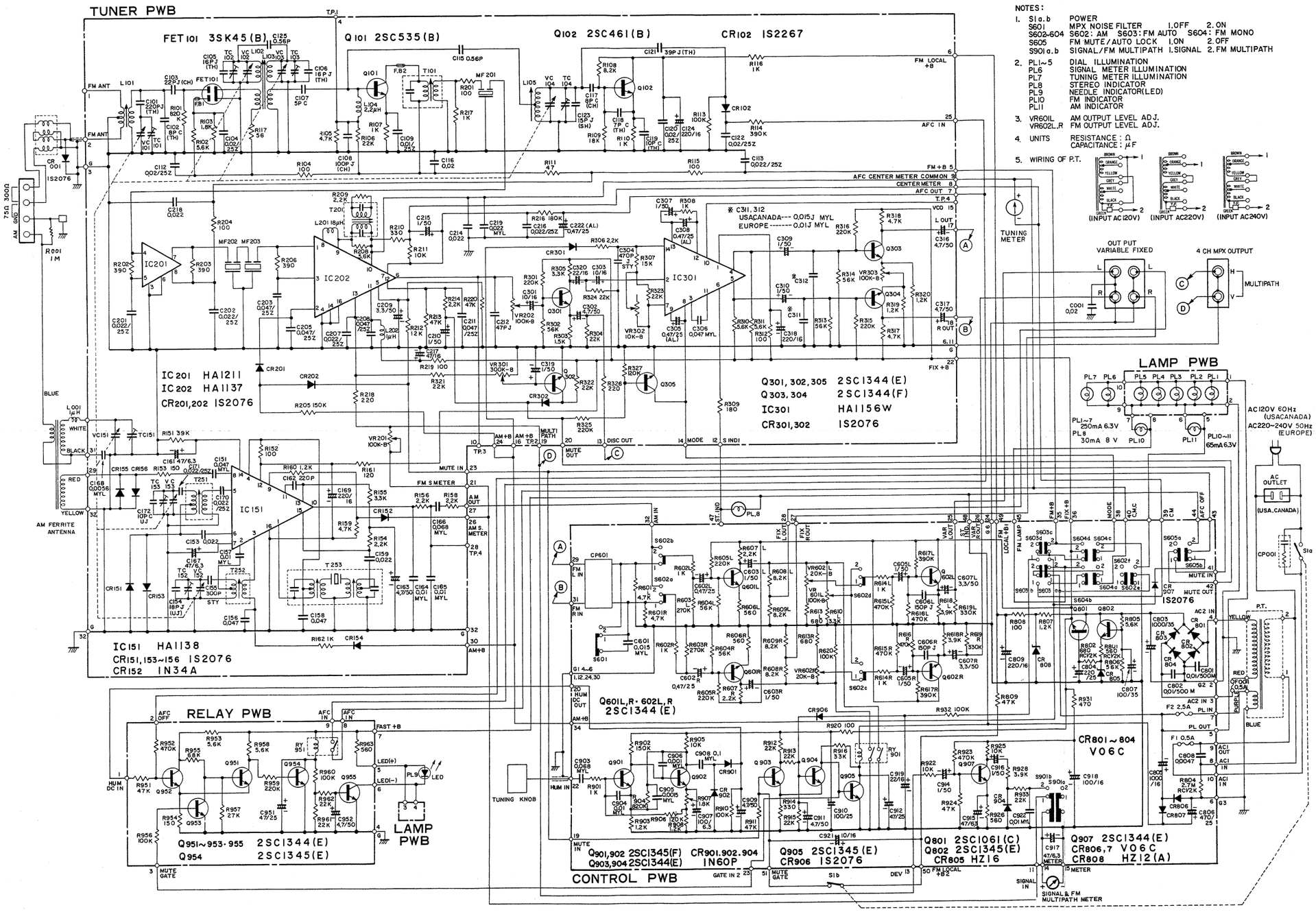
DIAL CORD SETTING

Note: The dial pulley shows the position that the variable condenser is turned to the counterclockwise direction.



6. CIRCUIT DIAGRAM, SCHALTPLAN, PLAN DE CIRCUIT

The circuit diagram is subject to change for improvement without notice.



NOTES:

1. S1a,b POWER
   S601 MPX NOISE FILTER 1.OFF 2.ON
   S602-604 S602: AM S603: FM AUTO S604: FM MONO
   S605 FM MUTE/AUTO LOCK 1.ON 2.OFF
   S901a,b SIGNAL/FM MULTIPATH 1.SIGNAL 2.FM MULTIPATH
2. PL1~5 DIAL ILLUMINATION
   PL6 SIGNAL METER ILLUMINATION
   PL7 TUNING METER ILLUMINATION
   PL8 STEREO INDICATOR
   PL9 NEEDLE INDICATOR(LED)
   PL10 FM INDICATOR
   PL11 AM INDICATOR
3. VR601L AM OUTPUT LEVEL ADJ.
   VR602L,R FM OUTPUT LEVEL ADJ.
4. UNITS RESISTANCE : Ω
   CAPACITANCE : μF
5. WIRING OF P.T.

* C311,312
USACANADA--- 0.015J MYL
EUROPE------0.01J MYL

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7. REPLACEMENT PARTS LIST, ERSATZTEILLISTE, TABLEAU DES PIÈCE

CAPACITORS

for TUNER PRINTED WIRING BOARD

SYMBOL NO.	STOCK NO.	DESCRIPTION			
C101	0248362	Ceramic, discal	220pF	±5%	50V
C102	0248308	Ceramic, discal	8pF	±0.25pF	50V
C103	0246448	Ceramic, discal	22pF	±5%	50V
C104	0245018	Ceramic, discal	0.02μF	+80% −20%	25V
C105	0248335	Ceramic, discal	16pF	±5%	50V
C106	0248335	Ceramic, discal	16pF	±5%	50V
C107	0248635	Ceramic, discal	5pF	±0.25pF	50V
C108	0246464	Ceramic, discal	100pF	±5%	50V
C109	0245017	Ceramic, discal	0.01μF	+80% −20%	25V
C112	0245018	Ceramic, discal	0.02μF	+80% −20%	25V
C113	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C115	0231185	Ceramic, discal	0.56pF	±5%	500V
C116	0245018	Ceramic, discal	0.02μF	+80% −20%	25V
C117	0246418	Ceramic, discal	8pF	±0.25pF	50V
C118	0248307	Ceramic, discal	7pF	±0.25pF	50V
C119	0248310	Ceramic, discal	10pF	±0.25pF	50V
C120	0245018	Ceramic, discal	0.02μF	+80% −20%	25V
C121	0248344	Ceramic, discal	39pF	±5%	50V
C122	0245018	Ceramic, discal	0.02μF	+80% −20%	25V
C123	0248174	Ceramic, discal	15pF	±5%	50V
C124	0252532	Electrolytic	220μF		16V
C125	0231185	Ceramic, discal	0.56pF	±5%	500V
C151	0275015	Mylar, film	0.047μF	±10%	50V
C153	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C154	0248496	Ceramic, discal	18pF	±5%	50V
C155	0228322	Styrol	300pF	±5%	50V
C156	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C157	0275011	Mylar, film	0.01μF	±10%	50V
C158	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C159	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C161	0252225	Electrolytic	47μF		6.3V
C162	0248692	Ceramic, discal	220pF	±5%	50V
C163	0252815	Electrolytic	4.7μF		50V
C164	0275011	Mylar, film	0.01μF	±10%	50V
C165	0275011	Mylar, film	0.01μF	±10%	50V
C166	0275016	Mylar, film	0.068μF	±10%	50V
C167	0252225	Electrolytic	47μF		6.3V
C168	0274235	Mylar, film	5600pF	±5%	50V
C169	0252532	Electrolytic	220μF		16V
C170	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C171	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C172	0248470	Ceramic, discal	10pF	±0.25pF	50V
C201	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C202	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C203	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C205	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C207	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C208	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C209	0252813	Electrolytic	3.3μF		50V
C210	0252811	Electrolytic	1μF		50V
C211	0244175	Ceramic, discal	0.047μF	+80% −20%	25V
C212	0248676	Ceramic, discal	47pF	±5%	50V
C214	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C215	0252811	Electrolytic	1μF		50V
C216	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C217	0252525	Electrolytic	47μF		16V
C218	0245018	Ceramic, discal	0.022μF	+80% −20%	25V
C219	0275013	Mylar, film	0.022μF	±10%	50V
C222	0251925	Aluminum solid	0.47μF	±10%	25V
C301	0252521	Electrolytic	10μF		16V
C302	0252815	Electrolytic	47μF		50V
C303	0252521	Electrolytic	10μF		16V
C304	0221522	Styrol	470pF	±5%	50V
C305	0251925	Aluminum solid	0.47μF	±10%	25V
C306	0275015	Mylar, film	0.047μF	±10%	50V
C307	0252811	Electrolytic	1μF		50V
C308	0251925	Aluminum solid	0.47μF	±10%	25V
C309	0252811	Electrolytic	1μF		50V
C310	0252811	Electrolytic	1μF		50V
C311	0275211	Mylar, film	0.01μF	±5%	50V (for Europe & U.K.)
C311	0275212	Mylar, film	0.015μF	±5%	50V (for Canada)
C312	0275211	Mylar, film	0.01μF	±5%	50V (for Europe & U.K.)
C312	0275212	Mylar, film	0.015μF	±5%	50V (for Canada)
C316	0252815	Electrolytic	4.7μF		50V
C317	0252815	Electrolytic	4.7μF		50V
C318	0252532	Electrolytic	220μF		16V
C319	0252811	Electrolytic	1μF		50V
C320	0252522	Electrolytic	22μF		16V

for CONTROL PRINTED WIRING BOARD

C601	0275012	Mylar, film	0.015μF	±10%	50V
C602(L,R)	0251955	Aluminum solid	0.47μF	±10%	25V
C603(L,R)	0252811	Electrolytic	1μF		50V
C605(L,R)	0252811	Electrolytic	1μF		50V
C606(L,R)	0248688	Ceramic, discal	150pF	±5%	50V
C607(L,R)	0252813	Electrolytic	3.3μF		50V
C801	0245408	Ceramic, discal	0.01μF	±20%	500V
C802	0245408	Ceramic, discal	0.01μF	±20%	500V
C803	0252741	Electrolytic	1000μF		35V
C804	0252632	Electrolytic	220μF		25V
C805	0252541	Electrolytic	1000μF		16V
C806	0252635	Electrolytic	470μF		25V
C807	0252731	Electrolytic	100μF		35V (for U.S.A. & Canada)
C808	0243873	Ceramic, discal	0.0047μF	+80% −20%	500V (for Europe & U.K.)
C808	0243875	Ceramic, discal	0.0047μF	+80% −20%	250V (for Europe & U.K.)
C809	0252532	Electrolytic	220μF		16V
C903	0275016	Mylar, film	0.068μF	±10%	50V
C904	0275011	Mylar, film	0.01μF	±10%	50V
C905	0274012	Mylar, film	1500pF	±10%	50V
C906	0274011	Mylar, film	1000pF	±10%	50V
C907	0252231	Electrolytic	100μF		6.3V
C908	0276011	Mylar, film	0.1μF	±10%	50V
C909	0252815	Electrolytic	4.7μF		50V
C910	0252631	Electrolytic	100μF		25V
C911	0252815	Electrolytic	4.7μF		50V
C912	0252625	Electrolytic	47μF		25V
C914	0252811	Electrolytic	1μF		50V
C915	0252225	Electrolytic	47μF		6.3V
C916	0252811	Electrolytic	1μF		50V
C917	0252225	Electrolytic	47μF		6.3V
C918	0252531	Electrolytic	100μF		16V
C919	0252522	Electrolytic	22μF		16V
C921	0252521	Electrolytic	10μF		16V
C922	0275011	Mylar, film	0.01μF	±10%	50V

for RELAY PRINTED WIRING BOARD

C951	0252625	Electrolytic	47μF		25V
C952	0252815	Electrolytic	4.7μF		50V

for CHASSIS ASSEMBLY

C001	0245018	Ceramic, discal	0.02μF	+80% −20%	25V

RESISTORS

for TUNER PRINTED WIRING BOARD

SYMBOL NO.	STOCK NO.	DESCRIPTION			
R101	0114303	Carbon film	820kΩ	±5%	SRD¼P
R102	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R103	0114167	Carbon film	1.8kΩ	±5%	SRD¼P
R104	0114131	Carbon film	100Ω	±5%	SRD¼P
R105	0114177	Carbon film	4.7kΩ	±5%	SRD¼P
R106	0114209	Carbon film	22kΩ	±5%	SRD¼P
R107	0114161	Carbon film	1kΩ	±5%	SRD¼P
R108	0114183	Carbon film	8.2kΩ	±5%	SRD¼P
R109	0114207	Carbon film	18kΩ	±5%	SRD¼P
R110	0114161	Carbon film	1kΩ	±5%	SRD¼P
R111	0114057	Carbon film	47Ω	±5%	SRD¼P
R113	0114281	Carbon film	100kΩ	±5%	SRD¼P
R114	0114295	Carbon film	390kΩ	±5%	SRD¼P
R115	0114131	Carbon film	100Ω	±5%	SRD¼P
R116	0114161	Carbon film	1kΩ	±5%	SRD¼P
R117	0114059	Carbon film	56Ω	±5%	SRD¼P
R151	0114215	Carbon film	39kΩ	±5%	SRD¼P
R152	0114131	Carbon film	100Ω	±5%	SRD¼P
R153	0114135	Carbon film	150Ω	±5%	SRD¼P
R154	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R155	0114173	Carbon film	3.3kΩ	±5%	SRD¼P
R156	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R158	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R159	0114177	Carbon film	4.7kΩ	±5%	SRD¼P
R160	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R161	0114133	Carbon film	120Ω	±5%	SRD¼P
R162	0114161	Carbon film	1kΩ	±5%	SRD¼P
R201	0114131	Carbon film	100Ω	±5%	SRD¼P
R202	0114145	Carbon film	390Ω	±5%	SRD¼P
R203	0114145	Carbon film	390Ω	±5%	SRD¼P
R204	0114131	Carbon film	100Ω	±5%	SRD¼P
R205	0114285	Carbon film	150kΩ	±5%	SRD¼P
R206	0114145	Carbon film	390Ω	±5%	SRD¼P
R208	0114279	Carbon film	5.6kΩ	±5%	SRD¼P
R209	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R210	0114143	Carbon film	330Ω	±5%	SRD¼P
R211	0114201	Carbon film	10kΩ	±5%	SRD¼P
R212	0114203	Carbon film	12kΩ	±5%	SRD¼P
R213	0114217	Carbon film	47kΩ	±5%	SRD¼P
R214	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R216	0114287	Carbon film	180kΩ	±5%	SRD¼P
R217	0114161	Carbon film	1kΩ	±5%	SRD¼P
R218	0114139	Carbon film	220Ω	±5%	SRD¼P
R219	0114131	Carbon film	100Ω	±5%	SRD¼P
R220	0138177	Carbon film	47kΩ	±5%	SRD¼P
R301	0114289	Carbon film	220kΩ	±5%	SRD¼P
R302	0114219	Carbon film	56kΩ	±5%	SRD¼P
R303	0114165	Carbon film	1.5kΩ	±5%	SRD¼P
R304	0114209	Carbon film	22kΩ	±5%	SRD¼P
R305	0114173	Carbon film	3.3kΩ	±5%	SRD¼P
R306	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R307	0114205	Carbon film	15kΩ	±5%	SRD¼P
R308	0114161	Carbon film	1kΩ	±5%	SRD¼P
R309	0114137	Carbon film	180Ω	±5%	SRD¼P
R310	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R311	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R312	0114131	Carbon film	100Ω	±5%	SRD¼P
R313	0114219	Carbon film	56kΩ	±5%	SRD¼P
R314	0114219	Carbon film	56kΩ	±5%	SRD¼P
R315	0114289	Carbon film	220kΩ	±5%	SRD¼P
R316	0114289	Carbon film	220kΩ	±5%	SRD¼P
R317	0114177	Carbon film	4.7kΩ	±5%	SRD¼P
R318	0114177	Carbon film	4.7kΩ	±5%	SRD¼P
R319	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R320	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R321	0114209	Carbon film	22kΩ	±5%	SRD¼P
R322	0114209	Carbon film	22kΩ	±5%	SRD¼P
R323	0114209	Carbon film	22kΩ	±5%	SRD¼P
R324	0114209	Carbon film	22kΩ	±5%	SRD¼P
R325	0114289	Carbon film	220kΩ	±5%	SRD¼P
R326	0114139	Carbon film	220Ω	±5%	SRD¼P
R327	0138203	Carbon film	120kΩ	±5%	SRD¼P

for CONTROL PRINTED WIRING BOARD

R601(L,R)	0114177	Carbon film	4.7kΩ	±5%	SRD¼P
R602(L,R)	0114161	Carbon film	1kΩ	±5%	SRD¼P
R603(L,R)	0114291	Carbon film	270kΩ	±5%	SRD¼P
R604(L,R)	0114219	Carbon film	56kΩ	±5%	SRD¼P
R605(L,R)	0114289	Carbon film	220kΩ	±5%	SRD¼P
R606(L,R)	0114149	Carbon film	560Ω	±5%	SRD¼P
R607(L,R)	0114169	Carbon film	2.2kΩ	±5%	SRD¼P
R608(L,R)	0114183	Carbon film	8.2kΩ	±5%	SRD¼P
R609(L,R)	0114183	Carbon film	8.2kΩ	±5%	SRD¼P
R610(L)	0114173	Carbon film	3.3kΩ	±5%	SRD¼P
R613(L,R)	0114151	Carbon film	680Ω	±5%	SRD¼P
R614(L,R)	0114161	Carbon film	1kΩ	±5%	SRD¼P
R615(L,R)	0114297	Carbon film	470kΩ	±5%	SRD¼P
R616(L,R)	0114297	Carbon film	470kΩ	±5%	SRD¼P
R617(L,R)	0114295	Carbon film	390kΩ	±5%	SRD¼P
R618(L,R)	0114175	Carbon film	3.9kΩ	±5%	SRD¼P
R619(L,R)	0114293	Carbon film	330kΩ	±5%	SRD¼P
R620	0114281	Carbon film	100kΩ	±5%	SRD¼P
R801	0134370	Composition	560Ω	±10%	RC½GF
R802	0134371	Composition	680Ω	±10%	RC½GF
R804	0139005	Composition	2.7MΩ	±10%	RC½GF
R805	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R806	0114219	Carbon film	56kΩ	±5%	SRD¼P
R807	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R808	0114131	Carbon film	100Ω	±5%	SRD¼P
R809	0114217	Carbon film	47kΩ	±5%	SRD¼P
R901	0114161	Carbon film	1kΩ	±5%	SRD¼P
R902	0114285	Carbon film	150kΩ	±5%	SRD¼P
R903	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R904	0114303	Carbon film	820kΩ	±5%	SRD¼P
R905	0114201	Carbon film	10kΩ	±5%	SRD¼P
R906	0114283	Carbon film	120kΩ	±5%	SRD¼P
R907	0114167	Carbon film	1.8kΩ	±5%	SRD¼P
R908	0114163	Carbon film	1.2kΩ	±5%	SRD¼P
R910	0114281	Carbon film	100kΩ	±5%	SRD¼P
R911	0114217	Carbon film	47kΩ	±5%	SRD¼P
R912	0114209	Carbon film	22kΩ	±5%	SRD¼P
R913	0114209	Carbon film	22kΩ	±5%	SRD¼P
R914	0114143	Carbon film	330Ω	±5%	SRD¼P
R915	0114209	Carbon film	22kΩ	±5%	SRD¼P

SYMBOL NO.	STOCK NO.	DESCRIPTION			
R916	0114213	Carbon film	33kΩ	±5%	SRD¼P
R920	0114131	Carbon film	100Ω	±5%	SRD¼P
R922	0114201	Carbon film	10kΩ	±5%	SRD¼P
R923	0114297	Carbon film	470kΩ	±5%	SRD¼P
R924	0114217	Carbon film	47kΩ	±5%	SRD¼P
R925	0114201	Carbon film	10kΩ	±5%	SRD¼P
R926	0114149	Carbon film	560Ω	±5%	SRD¼P
R928	0138135	Carbon film	3.9kΩ	±5%	SRD¼P
R931	0114147	Carbon film	470Ω	±5%	SRD¼P
R932	0114281	Carbon film	100kΩ	±5%	SRD¼P
R933	0114209	Carbon film	22kΩ	±5%	SRD¼P
for RELAY PRINTED WIRING BOARD					
R951	0114217	Carbon film	47kΩ	±5%	SRD¼P
R952	0114297	Carbon film	470kΩ	±5%	SRD¼P
R953	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R954	0114135	Carbon film	150Ω	±5%	SRD¼P
R955	0114221	Carbon film	68kΩ	±5%	SRD¼P
R956	0114281	Carbon film	100kΩ	±5%	SRD¼P
R957	0114211	Carbon film	27kΩ	±5%	SRD¼P
R958	0114179	Carbon film	5.6kΩ	±5%	SRD¼P
R959	0114289	Carbon film	220kΩ	±5%	SRD¼P
R960	0114281	Carbon film	100kΩ	±5%	SRD¼P
R961	0114209	Carbon film	22kΩ	±5%	SRD¼P
R962	0114209	Carbon film	22kΩ	±5%	SRD¼P
R963	0114149	Carbon film	560Ω	±5%	SRD¼P
for CHASSIS ASSEMBLY					
R001	0139007	Composition	1MΩ	±10%	RC½GF

IC & TRANSISTORS

for TUNER PRINTED WIRING BOARD			
IC201	2367191	HA1211	
IC202	2367122	HA1137	
IC301	2367173	HA1156W	
IC151	2367201	HA1138	
FET101	2327871	3SK45(B) BK(With ferrite core)	
Q101	2327881	2SC535 (B) (With ferrite core)	
Q102	0573507	2SC461 (B)	
Q301	2327443	2SC1344 (E)	
Q302	2327443	2SC1344 (E)	
Q303	2327444	2SC1344 (F)	
Q304	2327444	2SC1344 (F)	
Q305	2327443	2SC1344 (E)	
for CONTROL PRINTED WIRING BOARD			
Q601(L,R)	2327443	2SC1344 (E)	
Q602(L,R)	2327443	2SC1344 (E)	
Q801	2327153	2SC1061 (C)	
Q802	2327363	2SC1345 (E)	
Q901	2327364	2SC1345 (F)	
Q902	2327364	2SC1345 (F)	
Q903	2327443	2SC1344 (E)	
Q904	2327443	2SC1344 (E)	
Q905	2327363	2SC1345 (E)	
Q907	2327443	2SC1344 (E)	
for RELAY PRINTED WIRING BOARD			
Q951	2327443	2SC1344 (E)	
Q952	2327443	2SC1344 (E)	
Q953	2327443	2SC1344 (E)	
Q954	2327363	2SC1345 (E)	
Q955	2327443	2SC1344 (E)	

DIODES

for TUNER PRINTED WIRING BOARD			
CR102	2337141	1S2267	
CR151	2337011	1S2076	
CR152	0575002	1N34A	
CR153	2337011	1S2076	
CR154	2337011	1S2076	
CR155	2337011	1S2076	
CR156	2337011	1S2076	
CR201	2337011	1S2076	
CR202	2337011	1S2076	
CR301	2337011	1S2076	
CR302	2337011	1S2076	
for CONTROL PRINTED WIRING BOARD			
CR801	2327041	VO6C	
CR802	2327041	VO6C	
CR803	2327041	VO6C	
CR804	2327041	VO6C	
CR805	2337182	HZ16	
CR806	2327041	VO6C	
CR807	2327041	VO6C	
CR808	2337101	HZ12(A)	
CR901	0575019	1N60P	
CR902	0575019	1N60P	
CR904	0575019	1N60P	
CR906	2337011	1S2076	
CR907	2337011	1S2076	
for CHASSIS ASSEMBLY			
CR001	2337011	1S2076	

VARIABLE RESISTORS

for TUNER PRINTED WIRING BOARD			
VR201	0151226	100kΩ-(B)	
VR202	0151254	100kΩ-(B)	
VR301	0151284	300kΩ-(B)	
VR302	0151224	10kΩ-(B)	
VR303	0151226	100kΩ-(B)	
for CONTROL PRINTED WIRING BOARD			
VR601(L)	0151881	100 kΩ-(B)	(AM Level control)
VR602(L,R)	0151862	20kΩ-(B)	(FM Level control)

COILS & TRANSFORMERS

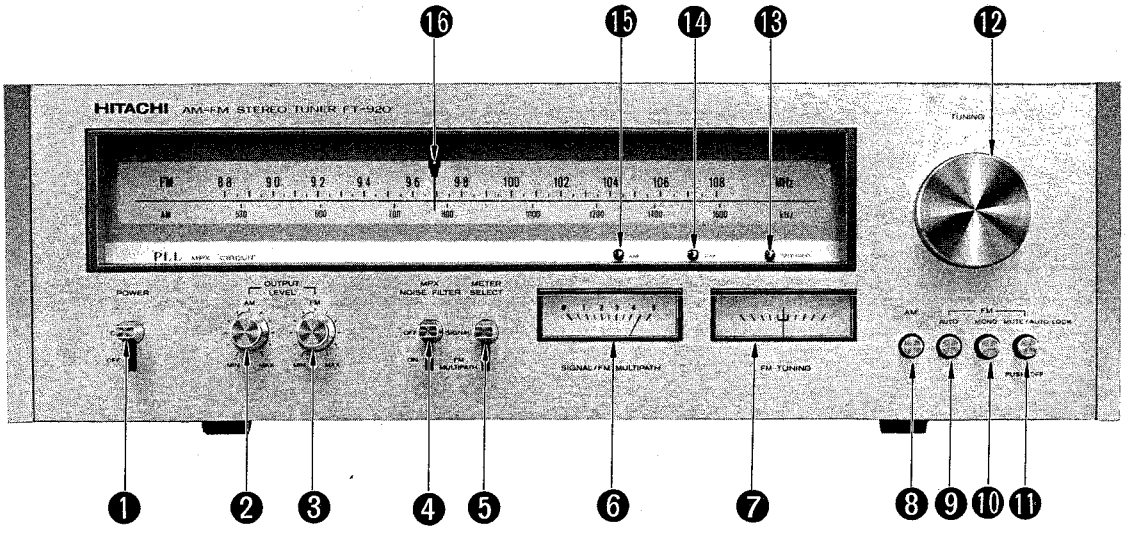
for TUNER PRINTED WIRING BOARD			
L101	2134651	FM ANT coil (white)	

SYMBOL NO.	STOCK NO.	DESCRIPTION
L102	2134657	FM RF 1 coil (purple)
L103	2134658	FM RF 2 coil (red)
L104	2227201	Choke coil (2.2μH)
L105	2134471	FM OSC coil
L201	2227119	Choke coil (18μH)
L202	2227081	Choke coil (1μH)
T101	2154293	FM IF transformer
T201	2154271	FM IF transformer
T251	2134446	AM RF coil
T252	2134445	AM OSC coil
T253	2154181	AM IF transformer
for CHASSIS ASSEMBLY		
L001	2227081	Choke coil (1μH)
	2120871	Balun transformer
MISCELLAUEOUS		
	2505283	Tuner printed wiring board assembly (for U.S.A. & Canada)
	2505284	Tuner printed wiring board assembly (for Europe & U.K.)
	2505293	Control printed wiring board assembly (for U.S.A. & Canada)
	2505294	Control printed wiring board assembly (for Europe & U.K.)
	2505341	Relay printed wiring board assembly
MF201-203	2134701	FM IF seramic filter
RY901	2647061	Lead relay
RY951	2647062	Lead relay
S601	2627091	Switch-lever switch
S602-605	2637682	Switch-miniture switch
S901	2627091	Switch-lever switch (for Canada, Europe & U.K.)
S1	2637693	Switch-power switch
S1	2637692	Switch-power switch (for U.S.A.)
F1	2727015	Fuse-wired in fuse (0.5A)
F2	2727013	Fuse-fuse (2.5A)
	4570123	Tuning shaft assembly
PL10, 11	2767116	Lamp-pilot lamp (65mA, 6.3V)
PL8	2767233	Lamp-lamp (30mA, 8V)
	2505271	Lamp printed wiring board assembly
	3920802	Pulley
	2218071	Power transformer
	2577193	Meter-signal meter
	2577192	Meter-tuning meter
CP001	0269015	Spark killer (for Europe & U.K.)
CP001	0269017	Spark killer (for U.S.A. & Canada)
CP601	2134492	Leak filter
PL1 – 7	2767201	Lamp-lamp (6.3V, 0.25A)
	3917522	Washer-8φwasher
	3917511	Spacer
	4683401	Rubber bushing (for lamp hold)
	4790096	Washer-8φ fiber washer
	2687311	6P terminal board
	4350791	ANT holder
	3913005	Bushing (for AC power cord) (for U.S.A. & Canada)
	3913001	Bushing (for AC power cord) (for Europe)
	0043793	Bushing (for AC power cord) (for U.K.)
	3913006	Bushing (for ANT Lead)
	3920381	Cover-AC socket cover (for U.K.& Europe)
	4387283	AC bush plate (for U.K. & Europe)
	2687612	Jack-2P US pin jack
	2687622	Jack-2P US pin jack
	2657281	Socket-AC socket (for U.S.A. & Canada)

SYMBOL NO.	STOCK NO.	DESCRIPTION
	2748441	AC power cord (for U.S.A. & Canada)
	2748511	AC power cord (for Europe)
	2747732	AC power cord (for U.K.)
	2687421	4P screw terminal board
	2134692	Ferrite antenna
	2687361	2P terminal board
	4770254	Nut-3φ nut
	2727161	Holder-lamp holder
	4567411	Screw-3φx6 CT bind screw (yellow)
	4567413	Screw-3φ x 10 CT bind screw
	4567451	Screw-3φx6 CT bind screw (silver)
	4567431	Screw-3φx6 CT bind screw (black)
	4567422	Screw-4φx8 CT bind screw
	4568812	Screw-3φx8 CT screw
	4567453	Screw-3φ x10 CT bind screw
	4567433	Screw-3φx10 CT bind screw
VC101-104 151-153	0281180	FM/AM variable capacitor
TC104	0283123	Trimmer capacitor
	3920661	Cap (for C808)
	4567414	Screw-3φ x12 CT bind screw
F001	2720056	Fuse-wired in fuse (0.5A)
for FINAL ASSEMBLY		
	3243593	Escutcheon assembly (with knob STOCK NO. 3282801)
	3282801	Knob-AM, FM Auto,Mono.Mute/Auto Lock knob
	3283251	Knob-Tuning knob
	3282661	Knob-Level control (AM,FM) knob
	3282981	Knob-Level knob (for power,MPX noise filter Meter select)
	4389912	Bottom board
	3916411	Leg
	4388181	Cover assembly
	4567413	Screw-3φ x10 CT bind screw
	4567412	Screw-3 φx8 CT bind screw
	4567441	Screw-4 φx6 CT bind screw
	4374051	Washer-11.5φ washer
for DIAL MECHANISM ASSEMBLY		
	3386761	Dial pointer
	3199441	Dial scale
	4387073	Dial panel
	3913552	Spot indicator (for AM, FM)
	3913554	Spot indicator (for STEREO)
	3338841	Spring
	0666704	Wire clip
	4567411	Screw-3φx6 CT bind screw
ACCESSORIES		
	2748393	FM antenna
	2748542	Patch cord

8. FRONT AND REAR PANEL, VORDERE UND HINTERE BEDIENUNGSTAFEL PANNEAUX AVANT ET ARRIERE

FRONT PANEL



❶ Power switch
❷ AM output level control
❸ FM output level control
❹ MPX noise filter switch
❺ Signal/FM multipath switch
❻ Signal/FM multipath meter
❼ Tuning meter
❽ AM switch
❾ FM auto switch
❿ FM mono switch
⓫ FM muting/auto-lock switch
⓬ Tuning control
⓭ FM stereo indicator
⓮ FM indicator
⓯ AM indicator
⓰ Auto-lock indicator

❶ Netzschalter
❷ MW-Ausgangspegelregler
❸ UKW-Ausgangspegelregler
❹ MPX-Störschutzfilter
❺ Signalpegel/FM-MULTIPATH-Umschalter
❻ Signalpegel/FM-MULTIPATH-Anzeigeinstrument
❼ Abstimmanzeige
❽ Mittelwellen
❾ UKW-Stereo-Automatik
❿ UKW-Mono
⓫ UKW-Stillabstimmung/ Scharfabstimm-Automatik
⓬ Abstimmregler
⓭ UKW-Stereo-Anzeige
⓮ UKW-Anzeige
⓯ MW-Anzeige
⓰ Anzeige für Scharfabstimm-Automatik

❶ Interrupteur d'alimentation
❷ Réglage du niveau de sortie AM
❸ Réglage du niveau de sortie FM
❹ Interrupteur du filtre de bruit MPX
❺ Interrupteur signal/écho MF
❻ Interrupteur signal/métreur du circuit de réjection
❼ Cadran de mesure de l'accord
❽ Interrupteur AM
❾ Interrupteur MF automatique
❿ Interrupteur MF mono
⓫ Interrupteur d'atténuation MF/ auto blocage des stations
⓬ Controle de l'accord
⓭ Indicateur stéréo MF
⓮ Indicateur MF
⓯ Indicateur AM
⓰ Indicateur de l'auto blocage

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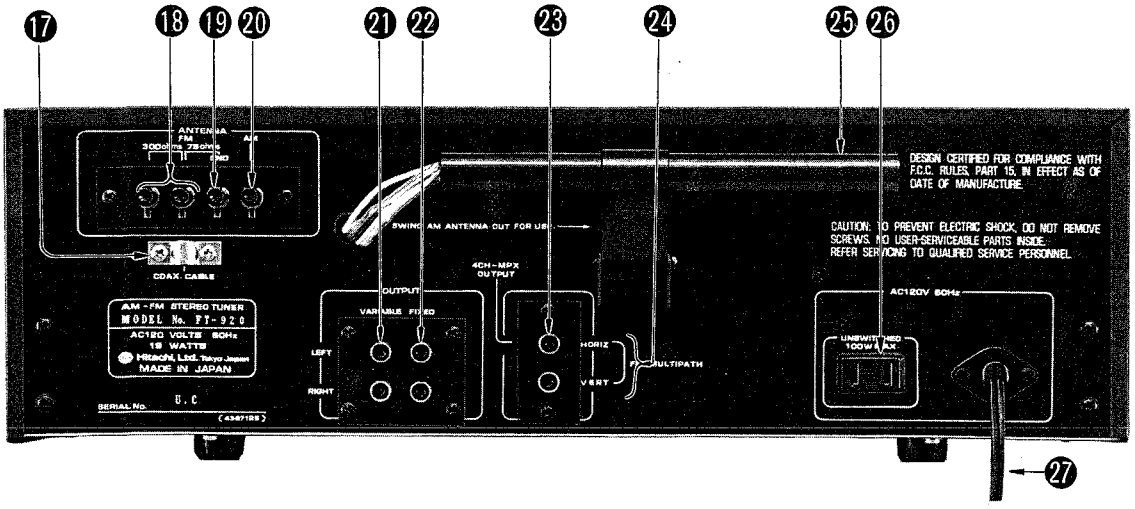
REAR PANEL



⑰ Coaxial cable clamp
⑱ FM antenna terminal
⑲ Earth terminal
⑳ AM antenna terminal
㉑ Output terminal (variable)
㉒ Output terminal (fixed)
㉓ FM 4 CH MPX output terminal
㉔ FM multipath output terminal
㉕ AM bar antenna
㉖ AC outlet (for U.S.A. & Canada set only)
㉗ Power cord

⑰ Klemme für Koaxial-Kabel
⑱ UKW-Antennenbuchse
⑲ Erdungsbuchse
⑳ MW-Antennenbuchse
㉑ Ausgangsbuchse (regelbar)
㉒ Ausgangsbuchse (fest)
㉓ FM 4 CH MPX Ausgangsbuchse
㉔ FM-MULTIPATH Ausgangsbuchse
㉕ MW-Ferritstabantenne
㉖ Wechselstrom-Anschluß (nur 120V)
㉗ Netzkabel

⑰ Pince de fixation du câble coaxial
⑱ Borne d'antenne MF
⑲ Borne de terre
⑳ Borne d'antenne AM
㉑ Borne de sortie (variable)
㉒ Borne de sortie (fixe)
㉓ Borne MF MPX à quatre canaux
㉔ Borne du circuit de réjection
㉕ Antenne AM
㉖ Prise auxiliaire (uniquement 120V)
㉗ Cordon d'alimentation

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FT-920

SERVICE MANUAL (SUPPLEMENT) No. 85-1

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GENERAL ALIGNMENT INSTRUCTION

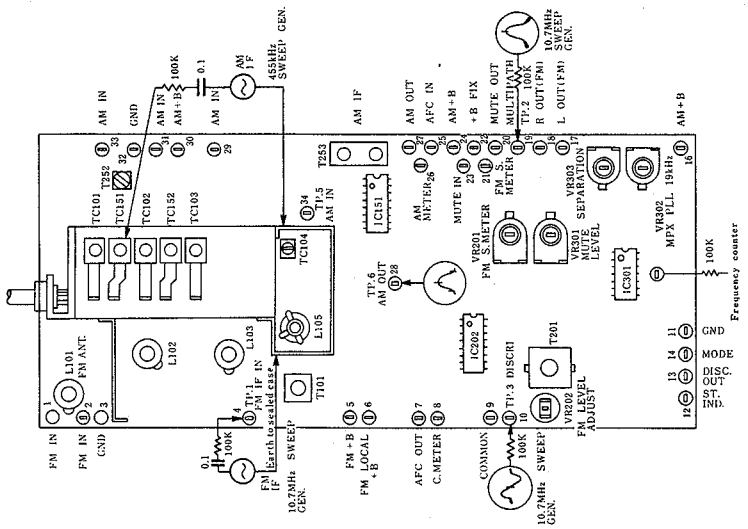

Fig. 1

FM TUNER ALIGNMENT

Test conditions

Set to the switch positions on the FT-920 as follows.

FUNCTION ..... FM, FM MUTE/AUTO LOCK
VOLUME ..... Minimum
POWER ..... ON

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1	(1)	IF Amplifier	10.7MHz ± 150kHz Sweep Generator	TP 1	TP 2		T101	CAUTION (1)
	(2)	"S" curve		TP 1	TP 3		T201	CAUTION (2)
2	(1)	Covering	2.1 FM signal generator 90MHz 400Hz 100% modulated, 60dB at input AC Voltmeter	Antenna terminal	REC OUT (L)	90MHz (Turn the dial pointer at 90MHz)	L105	Output Max.
	(2)		2.2 FM signal generator 106MHz 400Hz 100% modulated, 60dB at input AC Voltmeter			106MHz (Turn the dial pointer at 106MHz)	TC104	
	(3)							Repeat (1) & (2)

AM/FM STEREO TUNER

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Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave form
3	(1)	Tracking	3.1 FM signal generator 90MHz 400Hz 100% modulated, 10dB at input AC Voltmeter	Antenna terminal	REC OUT (L)	90MHz	L101, L102 L103	Output Max.
	(2)		3.2 FM signal generator 106MHz 400Hz 100% modulated, 10dB at input AC Voltmeter			106MHz	TC101, TC102 TC103	
	(3)							Repeat (1) & (2)
4		Discriminate	FM signal generator 98MHz 400Hz 100% modulated, 10dB at input AC Voltmeter	Antenna terminal	REC OUT (L)	98MHz	T201 (lower)	Cut the input signal level of FM signal generator and set the pointer of tuning meter to the center mark.
5		Distortion	FM signal generator 98MHz 400Hz 100% modulated, 60dB at input Distortion meter	Antenna terminal	REC OUT (L)	98MHz	T201 (upper)	Adjust T201 so that distortion will become min. CAUTION (3)
6		Output	FM signal generator 98MHz 400Hz 30% modulated, 60dB at input AC Voltmeter	Antenna terminal	REC OUT (L)	98MHz	VR202	650mV ± 1dB
7		FM Muting	FM signal generator 98MHz 400Hz 100% modulated, 20dB at input AC Voltmeter	Antenna terminal	REC OUT (L)	98MHz	VR301	Adjust VR301 so that the output signal can occur then the input signal is 24 ± 6dB.
8		Signal Meter	Same as step 4	Antenna terminal	Signal Meter	98MHz	VR201	Adjust VR201 so that the pointer of signal meter will be 4 – 5.

CAUTION

1. Short-circuit the OSC stage by earthing the live side of the variable capacitor in that stage. Adjust the core of T101 so that the gain will be max. In this case, reduce the level of the input signal of signal generator so that the waveform will be one shown in Fig. 2.
2. Short-circuit the OSC stage as described in Caution 1. Adjust the primary core (lower) of T201 so that the output is like the S curve shown in Fig. 3 with A and B symmetrical with respect to C.
   Adjust the secondary core (upper) so that the straight line of the S curve can be achieved.
   At the time of adjustment in Caution 1 and 2, center of the marker will sometimes not correspond to that of the waveform because of the ceramic filters used.

Fig. 2

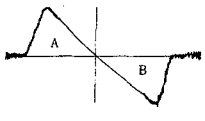

Fig. 3

3. As the result of the adjustment step 5, the best point of adjustment from step 4 will be shifted a bit. Repeat the adjustment of step 4 and 5 until the deterioration becomes minimum and the pointer of the tuning meter is in its center.

FM MPX ALIGNMENT

Test conditions

Set to the switch positions on the FT-920 as follows.

FUNCTION ..... FM AUTO
MODE ..... STEREO
VOLUME ..... Minimum
POWER ..... ON

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1		19kHz Free Running Frequency	FM signal generator 98MHz non-modulated 60dB at input AC Voltmeter Frequency counter	Antenna terminal	TP 4	98MHz	VR302	Adjust VR302 so that the counter will indicated 19kHz ± 30Hz.
2	(1)	Separation	1. FM signal generator 98MHz, 60dB at input 2. Stereo signal generator Main signal 92% modulated Pilot signal 8% modulated AC Voltmeter	Antenna terminal	REC OUT (L)	98MHz	VR303	After making the signal of Rch and Pilot, adjust VR303 so that the output wave form of Lch becomes min.
	(2)							Optimize VR303 so that the leak level of the Lch signal is equal to that of the Rch signal.

AM TUNER ALIGNMENT

Test conditions

Set to the switch positions on the FT-920 as follows.

FUNCTION ..... AM
VOLUME ..... Minimum
POWER ..... ON

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1		IF Amplifier	Sweep generator 455kHz	TC151	TP6		T253	Gain Max. CAUTION (4)
2	(1)	Covering	AM signal generator 600kHz 400Hz 30% modulated, 50dB at input AC Voltmeter	Ferrite antenna	REC OUT	600kHz	T252	Gain Max. CAUTION (5)
	(2)		AM signal generator 1400kHz, 400Hz 30% modulated, 50dB at input AC Voltmeter			1400kHz	TC152	
	(3)							Repeat (1) and (2)
3	(1)	Tracking	AM signal generator 600kHz 400Hz 30% modulated, 50dB at input AC Voltmeter	Ferrite antenna	REC OUT	600kHz	Ferrite antenna T251	Gain Max. CAUTION (5)
	(2)		AM signal generator 1400kHz 400Hz 30% modulated, 50dB at input AC Voltmeter			1400kHz	TC151 TC153	
	(3)							Repeat (1) and (2)

4. In item 1, set the capacitance of the variable capacitor to minimum and adjust red and blue cores of T253 so that the waveform is as shown in Fig. 4. As T253 contains a 455kHz ceramic filter, sometimes the center of the marker will not correspond to that of the waveform.
   In this case, neglect the marker. After adjusting as above, increase the output level of the sweep generator and adjust T253 again so that the top of the waveform A (indicated in Fig. 5) will be flat and wide.
5. In items 2 and 3, at the time of first adjustment, set input power at 74dB and adjust obtaining the minimum necessary input power (50dB).

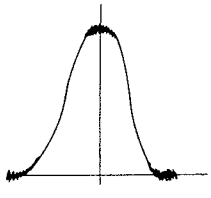

Fig. 4

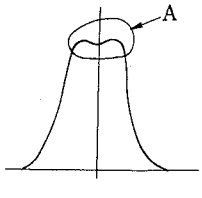

Fig. 5

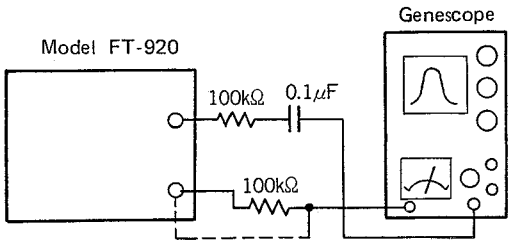

Fig. 6 FM IF Discriminator and AM IF alignments (AM and FM Step. 1)

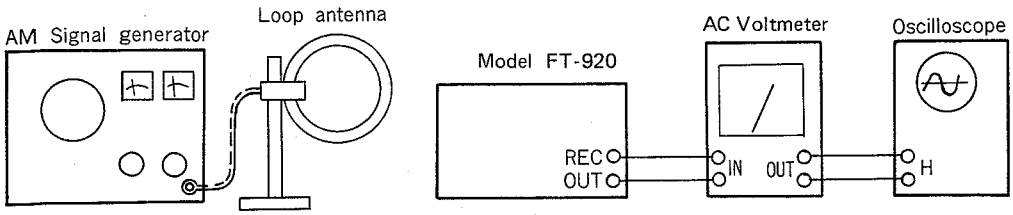

Fig. 7 AM frequency covering and tracking alignments (Step. 2 and 3)

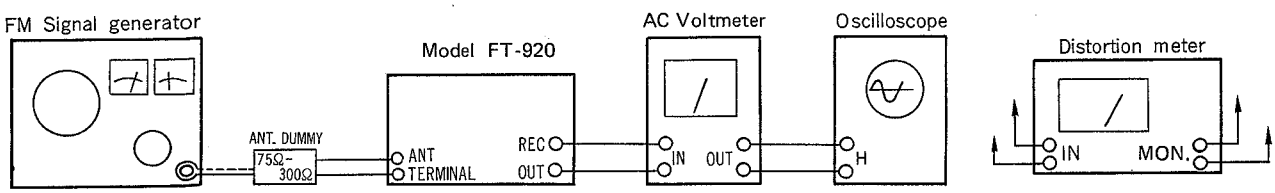

Fig. 8 FM frequency covering, tracking and other alignments (Step. 2 to 8)

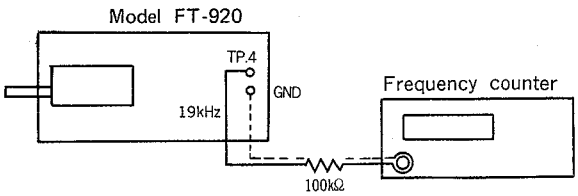

Fig. 9 FM MPX 19kHz adjustment (Step. 1)

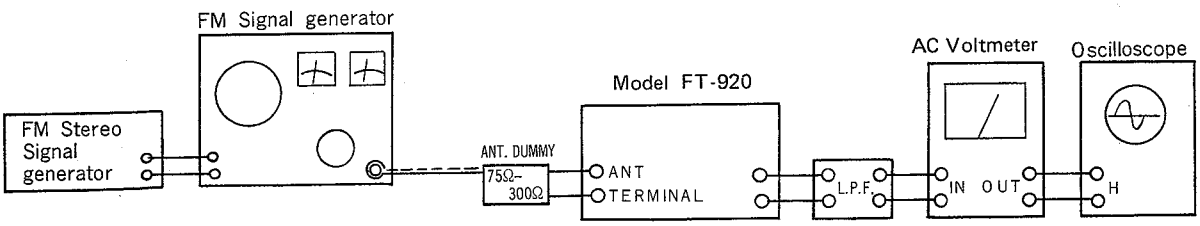

Fig. 10 FM MPX alignments (Step. 2)

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